

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Cancelled)
2. (New) A device for the characterization of molecules, comprising:
 - (a) a substrate forming a base of the device, the substrate having an aperture therethrough;
 - (b) a thin film disposed on the substrate and extending across the aperture; and
 - (c) a channel through the thin film in the area defined by the aperture, wherein the channel is sized so as to allow passage of molecules therethrough so that as a molecule passes therethrough the molecule will cause a detectable change characterizing the molecule.
3. (New) The device of claim 2 further comprising a container for holding a fluid medium having a quantity of molecules disposed therein, wherein the thin film is disposed within the container and divides the fluid medium into a first pool and a second pool wherein molecules are directed from the first pool through the channel and into the second pool by generating a voltage differential across the thin film.
4. (New) The device of claim 2 further comprising a first electrically conductive layer disposed within the thin film so as to form a first set of electrically independent leads, wherein each lead has a first end and a second end and the first end of each lead is proximate the channel.
5. (New) The device of claim 4 wherein the first end of each lead of the first set forms a portion of a perimeter of the channel.

6. (New) The device of claim 4 wherein the first set of electrically independent leads comprises two leads positioned on opposite sides of the channel.
7. (New) The device of claim 4 wherein the first set of electrically independent leads comprises four leads positioned evenly around the channel in a quadrupole arrangement.
8. (New) The device of claim 4 further comprising a second electrically conductive layer disposed within the thin film so as to form a second set of electrically independent leads, wherein each lead has a first end and a second end and the first end of each lead is proximate the channel.
9. (New) The device of claim 8 wherein the first set of leads is separated from the second set of leads by a dielectric layer.
10. (New) The device of claim 8 wherein the first end of each lead of the second set forms a portion of a perimeter of the channel.
11. (New) The device of claim 8 wherein the second set of electrically independent leads comprises two leads positioned on opposite sides of the channel.
12. (New) The device of claim 8 wherein the second set of electrically independent leads comprises four leads positioned evenly around the channel in a quadrupole arrangement.
13. (New) The device of claim 2, further comprising:
- (d) a first electrically conductive layer disposed within the thin film so as to form a first electrical lead; and
 - (e) a second electrically conductive layer disposed within the thin film so as to form a second electrical lead, wherein the second electrically conductive layer is separated from the first electrically conductive layer by a dielectric layer, so that the channel is formed to pass through the first

electrically conductive layer, the dielectric layer and the second electrically conductive layer.

14. (New) The device of claim 2 wherein the aperture has micro-scale dimensions and the channel has nano-scale dimensions.

15. (New) The device of claim 2 wherein the channel has a diameter less than approximately 10 nm.

16. (New) The device of claim 2 wherein the detectable change occurs in the device.

17. (New) The device of claim 2 wherein the detectable change occurs in the channel.

18. (New) The device of claim 2 wherein the molecule is a polymer molecule.

19. (New) The device of claim 18 wherein as the polymer molecule passes through the channel, a portion of the polymer molecule will cause a detectable change thereby characterizing the portion of the polymer molecule.

20. (New) The device of claim 19 wherein the portion of the polymer molecule is a monomer.

21. (New) The device of claim 20 wherein the portion of the polymer molecule is a plurality of monomers.